DELAWARE CENTER FOR THE INLAND BAYS

Inland Bays Journal

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The Inland Bays Journal is a publication of the Delaware Center for the Inland Bays. The Center is a nonprofit organization and a National Estuary Program. The purpose of the Inland Bays Journal is to educate and inspire people about this estuary of national significance and its restoration.

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Cover photo: A living shoreline was constructed at the Delaware Botanic Gardens at Pepper Creek during a partnership project with the Center.

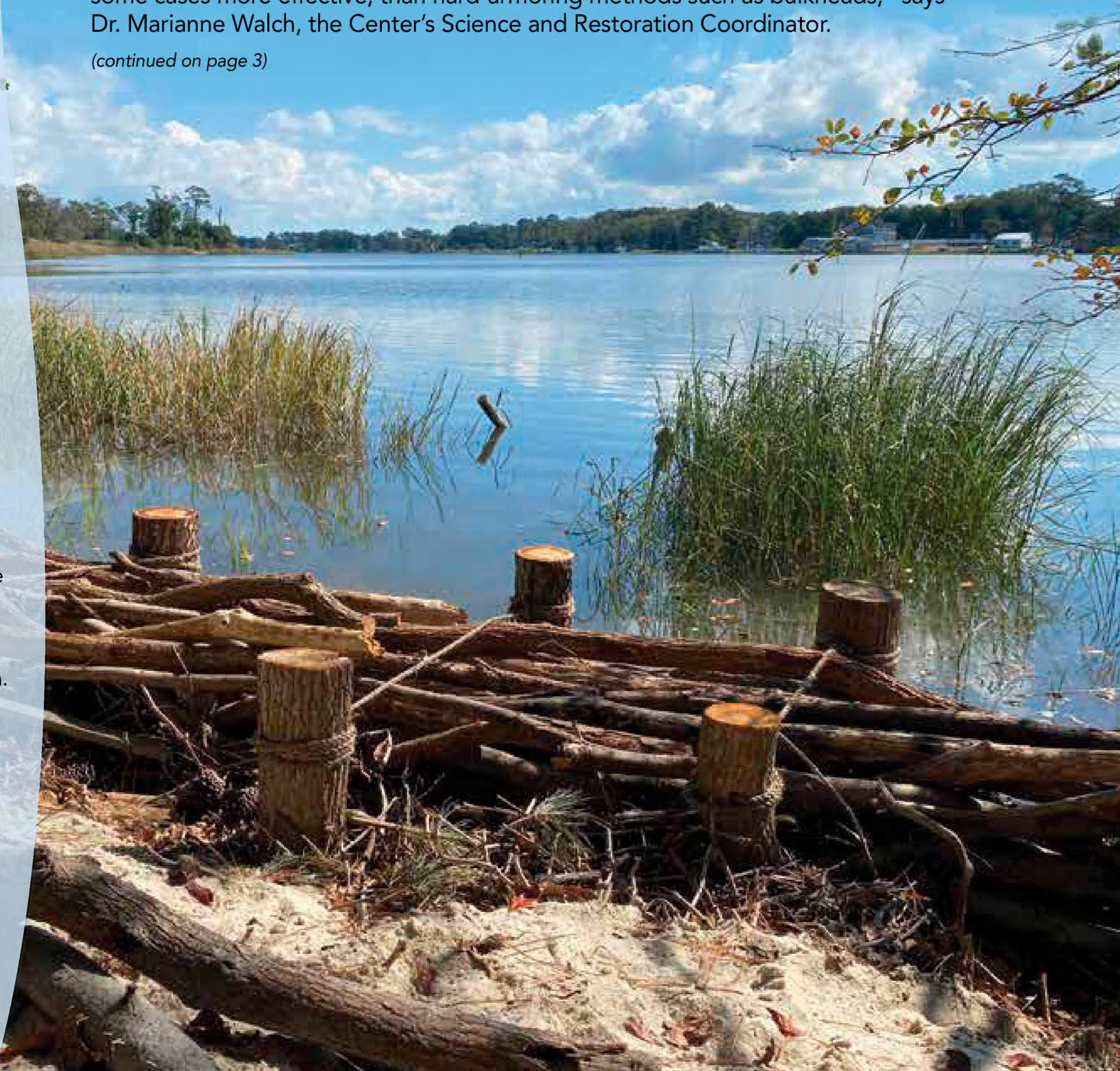
A New Partnership for an Innovative Shoreline Project

Along the banks of Pepper Creek near Dagsboro, a new partnership propelled by the power of volunteers is helping a stronger shoreline take root.

Staff and supporters from the Delaware Center for the Inland Bays and the Delaware Botanic Gardens at Pepper Creek braved the hot, humid days of summer to build one of Delaware's most innovative living shoreline projects using logs and branches gathered from the nearby woodlands.

"Using nature-based materials to stabilize shorelines is just as effective, and in some cases more effective, than hard-armoring methods such as bulkheads," says Dr. Marianne Walch, the Center's Science and Restoration Coordinator.

(continued on page 3)



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From the Director

The turtles must have felt cooped up this spring as well…

Looking out my office window, I could not believe how many Diamondback terrapins I was seeing. It was a warm and brilliant day in June during an otherwise cold, cloudy spring. And big mamma terrapins were leaping out of the marsh by the dozens to cross Inlet Road in search of warm sand in which to lay their eggs.

The problem was everyone else was hustling to make the most of the sunshine as well, and traffic on the road was zipping. I raced outside and picked up two turtles from the pavement to move them across the road; and then two more! Thankfully, the speed limit on Inlet Road is 25 mph and motorists were able to avoid the crossing turtles. Some drivers stopped to help them cross.

Unfortunately, a lot of terrapins were not so lucky that day, and Coastal Highway, where the speed limit is 55 mph, was littered with their carcasses. The ocean dunes east of the highway are prime nesting locations for terrapins, and nothing can stop the millennia of site fidelity and intense environmental cues that ignite their migration to these nursery grounds. Many don't make the journey, erasing years of potential reproduction.

The problem for the Inland Bays' terrapins is growing as development near marshes continues at a dramatic rate and more drivers use the roads. In other ways, some pressure has been taken off the population: terrapin soup is no longer on the menu. But without real science on population size and changes among this ecologically-important denizen of the estuary, our stewardship is flying blind.

This year, our science team completed the first of many surveys that will answer these questions and inform the preservation of the species. And we installed our first terrapin garden that we hope will lead to communities taking on the care for these tremendous turtles.

I hope you enjoy reading about these projects and more in this edition of the Inland Bays Journal!

Sincerely,

Chris Bason
Executive Director

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DE Center for the Inland Bays

(James Farm): James Farm Ecological Preserve

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(Delaware Botanic Gardens continued from page 1)

Volunteers from the Delaware Botanic Gardens plant marsh grasses along a new living shoreline partnership project along Pepper Creek.

Center Program Manager, Bob Collins, (left) and volunteer, Jerry Daugherty, work on the anchored branch toe.

But it's not often that engineering projects come already stocked with natural materials just lying around the site. That opportunity ultimately inspired an award-winning conceptual design, developed by Karen Steenhoudt as she pursued her master's degree in landscape architecture at Temple University.

"It's great how this living shoreline blends in with the environment: It looks like nature, it's part of nature, and you still reach your goal of decreasing erosion and gaining marsh area and bringing in sediment," Karen says.

Contractor Douglas Janiec of Sovereign Consulting, Inc. and Center Program Manager, Bob Collins, brought the key elements of her vision to life in the final design.

An anchored branch toe, a structure built along the low-tide line with the logs and branches collected from the nearby forest, makes up the sturdy part of the shoreline. Behind it, native plants like spicebush and high-bush blueberries supplied by local nurseries as well as a pollinator garden will offer wild visitors reprieve and sustenance. In between, the sandy sediment of a "bird's nest revetment" bordered by branches and dried greenbrier rhizomes will help rebuild wetland habitat to reduce erosion.

Irrigation hoses were used to "jet" the large support logs several feet into the sediment, as water produced the suction needed to hold them firmly in place. Logs were then bolted together to secure the smaller branches that make up the structure, which blends in almost as if nature had created it.

Living shorelines use both natural and nature-based materials to dampen the energy produced by wind and waves, protecting the shoreline from erosion while also enhancing coastal habitat. They can include coir fiber logs, wooden logs and branches, oyster castles, bagged shells, or rocks to stabilize shorelines, supplemented with more "green" elements like vegetation.

This project stabilizes about 300 feet of eroding shoreline and restores the adjacent wetland habitat. Crabs, fish, and snakes could be seen almost immediately enjoying the site, even as the volunteers who spent more than 100 hours building and planting the project still had their boots stuck in the mud.

This shoreline also will offer a place for visitors to see how living shorelines work and how beautiful they can be. A viewing platform will offer 90-degree views of the project for residents, students, businesses, contractors, and decision-makers to see how such natural infrastructure might fit with their own landscaping plans and needs.

"This was a really important aspect of the project because we value the educational component and, like the Center, the mission of our Gardens is closely tied to education," explains Dr. Brian Trader, Deputy Executive Director and Director of Horticulture at Delaware Botanic Gardens. "It's been a pleasure working with the team members from the Center, and it's a great cooperative project."

The project marks the Center's sixth living shoreline demonstration site in the Inland Bays. "'Anybody can do this,' is the message," professes Karen, the landscape architect.

To learn more about the Gardens, visit delawaregardens.org.

Preserving the Inland Bays One Parcel at a Time

"The Indian River is extremely polluted and needs help," says Chris Bason, the Center's Executive Director. "One of the best ways that we can help heal the river is to protect and restore the forests that buffer it. For the people of Sussex County, this acquisition is a perfect example of how we can make a difference when we work together."

This gorgeous piece of Piney Point is now preserved forever for the public's enjoyment.

Not far from the banks of the Indian River on the eastern edge of Piney Neck, tiny trees grow bigger with each passing season, silently offering a promise to local wildlife that there will be a new forested home for them here in the future.

On 52 acres next to the Piney Point tract on the Assawoman Wildlife Area, a new path to partnerships has sprouted in support of the Center's efforts to reforest areas of the watershed.

The Center crossed this new path in 2019, when staff saw that this Ware Cove property was up for sale. They swiftly worked with the Department of Natural Resources and Environmental Control to leverage the funding needed to preserve, protect, and restore it.

A few months later, 16,600 tree seedlings, including White Oak, American Plum, and Eastern Red Cedar, were planted on 16 acres to create a buffer on the Indian River that will capture more than 250 pounds of nutrient pollution each year.

Expanding this area of coastal forest adds to a larger tract of connected coastal woodland habitat, an ecosystem that's been rapidly disappearing in southern Delaware. The purchase expanded the size of the Assawoman Wildlife Area on Piney Point by 11 percent.

Get Out for the Bays!
a huge success!
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Thanks to all who supported this effort, especially our matching donors!
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The Ware Cove reforestation project was funded by the Center and the Delaware Open Space Program. The project's success has opened new paths for collaborative efforts among agencies and partners to preserve and restore other ecologically and economically important areas of the Bays.

"I think folks that moved here even 10 years ago are probably amazed at the changes we're seeing in the watershed in terms of development," says Michelle Schmidt, the Center's Watershed Coordinator. "I think people are going to be really happy we preserved areas like this for them to enjoy for generations to come."

BUSINESS FOR THE BAYS:
Inland Bays Garden Center

Cheryl Rehrig (left) and Denise Hoeksema (right).

The Inland Bays Garden Center has been a valued Business for the Bays since 2015, but for owners Cheryl Rehrig and Denise Hoeksema, clean water played an important role in their lives long before that time. Both grew up playing in lakes and streams and drinking from natural springs. Later in life, they developed a passion for more active watersports including kayaking, windsurfing, and sailing.

After first relocating to Delaware nearly 30 years ago, Cheryl found the Inland Bays to be some of the cleanest waters of the mid-Atlantic region; however, by the mid-90s, they became overcome by frequent algae blooms resulting from excess nutrients seeping into local waterways.

"The odor was unbearable, making it difficult to even be near the shore," Cheryl remembers. "It was then that I began to understand the importance of the health of our Inland Bays and got involved to help."

Cheryl began to attend the Center's Citizens Advisory Committee meetings. She and Denise also attended numerous educational seminars and became dedicated volunteers, participating in a variety of activities including the annual Horseshoe Crab Survey. Denise fondly recalls her first time participating in the survey: "I was amazed at the numbers of crabs that we would count along the shoreline—truly a wonderful experience!"

In 2015, Cheryl and Denise opened the Inland Bays Garden Center and decided to specialize in native plants, recognizing the critical role that they play in our environment as both food sources and habitats for wildlife. There is a key message behind their carefully crafted slogan, 'Gardening to Make a Difference.'

> **"Each one of us has the responsibility and power to use gardening, and the plants we select, to help restore the native habitats that have been destroyed," Cheryl says.**

Cheryl and Denise took their support of the Center to new heights that year by becoming a Business for the Bays, a designation awarded to local businesses that support the Center's mission through donations, partnerships, and participation in programs.

"We reach a lot of people through our business, and we use these interactions to educate our customers about the importance of sustaining our environment," Cheryl says. "The Center provides a lot of expertise and information that we continually pass on to our customers, thus supporting our missions collectively."

"For me, the Bays are special places to play, but also to cherish and protect," Denise says. "Animals are losing habitat at an alarming rate and we have more people using the Bays than ever before. The work of the Center is worth supporting if we want to keep our Bays healthy."

Many thanks to you, Cheryl and Denise, for your generosity and outstanding efforts to spread environmental awareness and mindful gardening practices throughout our watershed.

Inland Bays Garden Center

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Interested in supporting the Center as a Patron or a Business for the Bays? Contact Anna Short at ashort@inlandbays.org or visit inlandbays.org/donate.

Summer of the Terrapin

Pilot terrapin garden constructed near the Center office at the Delaware Seashore State Park.

"We hope to expand the number of gardens throughout the Inland Bays and build a truly rewarding community-backed initiative," Lisa says. "Estuaries serve as both their nursery and lifelong home. We want to help give them the best chance for success from day one."

Terrapin Tenants Welcome

Twenty-two tons of sand. Nine staff. Less than three hours.

That's what it took this June to build a new terrapin garden along the Indian River Bay at Delaware Seashore State Park, just across Inlet Road from the Center's office. This sandy patch that's complemented by native vegetation now offers easy and safe access for Diamondback terrapins, the only true estuarine turtle in North America, to lay their eggs.

"Sadly, nesting habitat is being lost to coastal development," says Lisa Swanger, the Center's Outreach & Education Coordinator. "Instead of having to risk crossing busy roadways to find a suitable spot, females can safely nest in one of these gardens."

It's not unusual for it to take a couple of years for terrapins to use the new, sandy spot for nesting, Lisa explains. But staff kept a close eye on potential predators and nesting terrapins by monitoring the gardens for animal tracks during the nesting season. They also stood by with custom-made cages that would keep predators like foxes and raccoons from dining on any eggs.

While the Center's new garden awaits its first terrapin tenants, it also offers passers-by a chance to learn more with an interpretive sign that showcases the beloved species and the challenges it faces. Increasing development, sea-level rise, high-speed cars, and accidental catches in crab pots are all threats to terrapins.

The Center plans to install two more gardens in 2021, and hopes waterfront residents, visitors, or businesses with property near ideal nesting areas will catch on to the trend, too.

The First Critical Terrapin Census

What is the population status of Diamondback terrapins in the Inland Bays? Are these charismatic natives keeping pace with stresses of development and other changes in their coastal environment?

Those are some of the questions the Center wants to answer with the Inland Bays' long-term terrapin monitoring program, which just launched this summer. Without basic information on how many terrapins live in the Bays and where they can be found, figuring out how threats like increased traffic or habitat loss will impact future generations of terrapins is difficult. This survey is the start of a conservation effort to support this beloved coastal species that also plays a key role in the estuaries' food web.

This June, Center staff and interns hopped in their kayaks to paddle pre-planned routes through the Bays in search of terrapins. While one counted each bobbing head and basking body, the other would mark their GPS point. Standing along the shores of several locations in the Bays, staff and interns did the same. While volunteers were largely unable to participate in this first survey year due to COVID-19, 1,179 terrapins were recorded across the seven water-based survey sites and eight land-based sites.

In future seasons, volunteers will be key in conducting the survey throughout the Bays more frequently by both land and water. Ideally, land-based sightings will be reported from anywhere throughout the Bays' watershed, from public parks to private docks.

Collecting information about where and how many terrapins are seen throughout the Bays over a long period of time will help researchers better understand why terrapins frequent some places more than others, how their human neighbors may be affecting them, and ways the Center and community might be able to help support their population.

What will your legacy be?

From sandy shores to vibrant marshes, the Inland Bays are full of precious treasures in need of protection...

Planned giving is a great way to make a meaningful contribution that costs you nothing now but guarantees that the Center's work will continue for years to come. Consider a planned gift today to provide for future generations of every species beyond your lifetime.

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